

APRIL/MAY 2024

**23PEPH14B — CRYSTAL GROWTH AND
THIN FILMS**

Time : Three hours

Maximum : 75 marks



SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

Define Nucleation.

2. What is mean by “rate of nucleation”?
3. State Saturation and Super saturation.
4. Write down any three applications of high temperature solution growth.
5. Explain basis principle of Gel techniques.
6. Write any two advantages of CVD.
7. What is mean by “Spray Pyrolysis”?
8. State thermal evaporation.
9. Define Roll of substrate
10. What is mean by Interferometry?

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Explain Kinetic theory of nucleation.

Or

- (b) Explain in details about the vapour phase solutions.

12. (a) Write short notes on

- (i) Solubility diagram
- (ii) Super Solution

Or

- (b) Explain Solution growth.

13. (a) Give an important of melt growth.

Or

- (b) Describe the Physical vapour deposition.

14. (a) Explain in detail about electron beam evaporation.

Or

- (b) Explain basic principle of chemical bath deposition.

15. (a) Explain the nature of thin films.

Or

- (b) Explain the principle of working in Quartz crystal oscillator method.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain classical theory of nucleation.

17. Describe crystallization principles and growth techniques.

18. Describe with the neat diagram about Czochralski pulling method.

19. Explain pulsed LASER deposition.

20. Describe various stages in thin film formation.

